Example 2 shows you in general what parametric equations are.

EXAMPLE 2 ➤ On graph paper, plot the graph of these parametric equations by first calculating values of x and y for integer values of t from -3 through 7.

$$x_1(t) = |t - 2|$$
$$y_1(t) = \sqrt{t + 2}$$

t	x	y
−3	5	None
−2	4	0
−1	3	1
0	2	1.4142…
1	1	1.7320…
2	0	2
3	1	2.2360…
4	2	2.4494…
5	3	2.6457…
6	4	2.8284…
7	5	3

SOLUTION The table shows values of t, x, and y.

Figure 1-5g shows the graph of the parametric equations. Note that y is not a function of x because there are two values of y for some values of x.

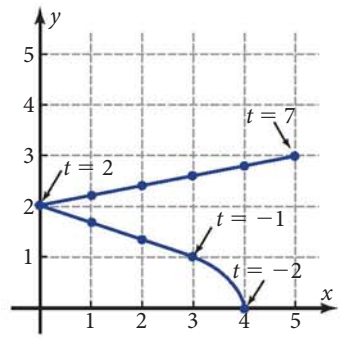

Figure 1-5g

The independent variable t in parametric equations is called the **parameter.** The word comes from the Greek *para-* meaning "alongside," as in "parallel," and *meter,* meaning "measure." The values of t do not show up on the graph in Figure 1-5g unless you write them in.

Your grapher is programmed to plot parametric equations. For the equations in Example 2, use parametric mode and enter

$$x_1(t) = \text{abs}(t - 2)$$
$$y_1(t) = \sqrt{(t + 2)}$$

Use a window with $-3 \le t \le 7$, $0 \le x \le 5$, and $0 \le y \le 5$ and a convenient t-step such as 0.1. The graph will be similar to the graph in Figure 1-5g. ◀

Example 3 shows you how to use parametric equations to plot inverse relations on your grapher.

EXAMPLE 3 ➤ Plot the graph of $y = 0.5x^2 + 2$ for x in the domain $-2 \le x \le 4$ and its inverse using parametric equations. What do you observe about the domain and range of the function and its inverse?